Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

Suggestions for Students of Mathematics. Mathematics and Life Activities (7 pages), issued in March, 1921, by the Department of Mathematics of Brown University. An extended review appeared in *Mathematics Teacher,* volume 14, pages 349–350. A third revised and enlarged edition was published in October, 1922. In this edition a new section is devoted to a "Literature List"; that is, a list of 23 books, in English, and in the mathematical library of the University, "which may be read with profit—though not in every case with complete understanding—by those who are taking, or have credit for, freshman mathematics." A limited number of these pamphlets are available for distribution to those interested.

Two new parts of the *Encyklopädie der Mathematischen Wissenschaften* have been published April 1 and May 15, 1922, respectively. The first part, V-2-5, "Elektronentheorie der Metalle" by Rudolf Seeliger, 15+777-878 pages, completes volume V-2. The second part, III-1-9, "abgeschlossen 31 Aug. 1916", is "Polyeder und Raumeinteilungen" by Ernst Steinmetz, 1-139, special paging in italics. It is announced that III-1-8 with register for III-1 will appear later. There are now 10 complete part volumes of the *Encyklopädie,* namely: I-1, I-2, II-1-1, II-1-2, II-2, IV-1, IV-3, IV-4, V-1, and V-2.

For many years, 1900-1915, an important feature of *Bibliotheca Mathematica* was a section devoted to "Kleine Bemerkungen" on the latest edition of Cantor's *Vorlesungen über Geschichte der Mathematik.* In this way a great many corrections, and much valuable information, were brought together. In *Jahresbericht der deutschen Mathematiker-Vereinigung,* volume 31, 1922, pages *73-77,* a section of this kind has been started, and will continue so long as the publication of *Bibliotheca Mathematica* is suspended. In this section there are 11 notes, by Ferdinand Rudio, on various passages in Cantor's volume 3, pages 549-624.

ARTICLES IN CURRENT PERIODICALS.

BULLETIN OF THE AMERICAN MATHEMATICAL SOCIETY, volume 28, January–February, 1922: "The twenty-eighth summer meeting of the American Mathematical Society" by R. G. D. Richardson, 1–15; A letter from the President of the Society, G. A. Bliss, 16; "Report on topics in the theory of divergent series" by W. A. Hurwitz, 17–36; "Note on an irregular expansion problem" by D. Jackson, 37–41; "The Bôcher Memorial Prize" by E. B. Van Vleck, 42–44; "On Kakeya's minimum area problem" by W. B. Ford, 45–53; "Convergence of sequences of linear operations" by T. H. Hildebrandt, 53–58; Review by D. Jackson of C. de la Vallée Poussin, *Leçons sur l'Approximation des Fonctions d'une Variable Réelle* (Paris, 1919), 59–61; Reviews by D. E. Smith of B. Lefebvre, *Notes d'Histoire des Mathématiques* (*Antiquité et Moyen Âge*) (Bruxelles, 1920), of *Bibliotheca Chemico-Mathematica* (2 volumes, London, 1921), and of W. W. Bryant, *Kepler* (London, 1920), by P. Field of P. Burgatti, *Lezioni di Meccanica Razionale* (2d edition, Bologna, 1919), and of C. Burali-Forti and I. Boggio, *Meccanica Razionale* (Turin and Genoa, 1921), by A. R. Crathorne of A. Loewy, *Mathematik des Geld- und Zahlungsverkehrs* (Leipzig and Berlin, 1920), by V. Snyder of T. Schmid, *Darstellende Geometrie,* Vol. II (Berlin and Leipzig, 1921), by H. B. Phillips of F. Reiche, *Die Quantentheorie, ihr Ursprung und ihre Entwicklung* (Berlin, 1921), and by D. N. Lehmer of L. Poletti, *Tavole di Numeri Primi entro Limite Diversi, e Tavole Affini* (Milan, 1920), 62–71; Notes, 72–82; New Publications, 83–88—March: "The October meeting of the American Mathematical Society" by R. G. D. Richardson, 89–94; "The October meeting of the San Francisco Section" by B. A. Bernstein, 94–97; "The simple group of order 2520" by G. A. Miller, 98–102; "A theorem of oscillation" by W. E. Milne, 102–104; "A two-way infinite series for Lebesgue integrals" by M. B. Porter, 105–108; "Note on Euler's

φ-function" by R. D. Carmichael, 109–110; "Extensions of Dirichlet multiplication and Dedekind inversion" by E. T. Bell, 111–122; "Charles Leonard Bouton" by W. F. Osgood, J. L. Coolidge, G. H. Chase, 123–124 [A Minute read before the Faculty of Harvard University, March 28, 1922]; Review by V. Snyder of *Felix Klein: Gesammelte mathematische Abhandlungen.* Vol. 1. *Liniengeometrie, Grundlegung der Geometrie, Zum Erlanger Programm* (Berlin, 1921), 125–129; Reviews by A. Emch of G. Scheffers, *Lehrbuch der darstellenden Geometrie* (2 volumes, Berlin, 1919, 1920), and of G. B. Halsted, *Girolamo Saccheri's Euclides Vindicatus* (Chicago, 1920), by L. W. Dowling of E. Bally, *Géométrie Synthétique des Unicursales de Troisième Classe et de Quatrième Ordre* (Paris, 1920), and by F. Cajori of A-C. Clairaut, *Éléments de Géométrie* (Paris, 1920), 130–133; Notes, 134–138; New Publications, 139–144—April–May: "The fourteenth regular meeting of the Southwestern Section" by E. B. Stouffer, 145–147; "The twenty-eighth annual meeting of the American Mathematical Society" by R. G. D. Richardson, 148–164; "The moment of inertia in the problem of n bodies" by W. D. MacMillan, 165–168; "Substitutions commutative with every substitution of an intransitive group" by G. A. Miller, 168–170; "Summable infinite determinants" by W. L. Hart, 171–178; "Algebraic guides to transcendental problems" by R. D. Carmichael, 179–210; Review by J. P. C. Southall of *Oeuvres complètes de Christiaan Huygens publiées par la Société Hollandaise des Sciences.* Tome treizième. *Dioptrique* (La Haye, 1916), 211–214; "Books on relativity" by G. D. Birkhoff, 215–221 [Review of *Das Relativitätsprinzip. Lorentz. Einstein. Minkowski* (Leipzig and Berlin, 1920), H. Weyl, *Raum. Zeit. Materie* (Berlin, 1921), A. Einstein, *Relativity. The special and the general Theory* (Translated by R. W. Lawson, New York, 1921), R. D. Carmichael, *The Theory of Relativity* (New York, 1920), A. Angerbach, *Das Relativitätsprinzip* (Leipzig and Berlin, 1920), A. N. Whitehead, *The Concept of Nature* (Cambridge, England, 1920), and L. E. J. Brouwer, *Wiskunde, Waarheid, Werkelijkheid* (Groningen, 1919)]; Reviews by E. B. Wilson of C. Schaefer, *Einführung in die theoretische Physik* (Berlin, 1921), by E. S. Allen of D. M. Y. Sommerville, *The Elements of Non-Euclidean Geometry* (Chicago and London, 1919), by E. W. Brown of *Annuaire du Bureau des Longitudes pour 1921* (Paris, 1921), by J. W. Young of L. Heffter, *Die Grundlagen der Geometrie als Unterbau für die Analytische Geometrie* (Leipzig and Berlin, 1921), by C. N. Reynolds of L. Fabre, *Les Théories d'Einstein* (Paris, 1921), 222–224; Notes, 225–227; New Publications, 228–232.

Bulletin des Sciences Mathématiques, volume 46, May, 1922: "Sur l'itération de certaines fonctions algébriques" by M. P. Fatou, 188–198; "Sur un invariant cinématique et le théorème de la composition des vitesses" by M. G. Koenigs, 198–199; "Sur un théorème de M. Fatou" by M. G. Valiron, 200–208.

Journal de Mathématiques pures et appliquées, ninth series, volume 1, fasc. 2, 1922: "Les théories einsteiniennes et les principes du calcul intégral" by A. Buhl, 95–104; "La théorie de la relativité et les faits observés" by S. Zaremba, 105–139; "Sur les équations de la gravitation d'Einstein" by E. Cartan, 141–203; "Relativité restreinte et géométrie des systèmes ondulatoires" by J. Le Roux, 205–253.

Journal of the Indian Mathematical Society, volume 14, April, 1922: "Progress report" by P. V. Seshu Aiyar, 41–42; "A statistical study of some examination marks" by P. V. Seshu Aiyar and S. R. Ranganathan, 43–54; "Determinants whose elements are Eulerian, prepared Bernoullian, and other numbers" by C. Krishnamachary and M. Bheemasena Rao, 55–62; "Mathematics in India, then and now" (conclusion) by V. Sankaran, 63–67; "Some criteria for divisibility" by P. K. Das, 68–69; "Perpetual calendar for every year of the Christian era" by C. Ganapati Aiyar, 70–71; Questions and Solutions, 72–79.

Mathesis, volume 36, June, 1922: "Bibliographie du triangle et du tétraèdre" (to be continued) by J. Neuberg, 209–211; "Sur une transformation homographique d'une équation" by F. Simonart, 212–218; "Sur deux groupes de trois coniques" by J. Degueldre, 218–219; "Sur l'ellipse et le cercle de Nagel d'un triangle" (conclusion) by J. Neuberg, 220; "Application du calcul vectoriel à la détermination du couple gyroscopique" by F. Bouny, 221–225; "Remarques sur l' 'Arithmétique' de Simon Stevin" (to be continued) by H. Bosmans, 226–231; "Sur un théorème de M. d'Ocagne et son extension aux courbes gauches" by R. Goormaghtigh, 232–233; "Un théorème de M. Appell" by Ad. M., 234–236; "Nécrologie," 236–237; "Notes mathématiques," 237–241; Questions and Solutions, 242–256.

Nature, volume 109, June 17, 1922: "More books on relativity" by E. Cunningham, 770–772 [Review of W. H. V. Reade, *A Criticism of Einstein and his Problem* (Oxford, 1922), H. Dingle, *Relativity for All* (London, 1922), C. Nordmann, *Einstein and the Universe: A Popular Exposition of the Famous Theory* (London, 1922), J. Becquerel, *Le Principe de Relativité et la Théorie de la*

Gravitation (Paris, 1922), G. Mie, *La Théorie einsteinienne de la Gravitation: Essai de vulgarisation de la théorie* (Paris, 1922), E. M. Lémeray, *L'Éther actuel et ses précurseurs* (*simple récit*) (Paris, 1922), C. Von Horvath, *Raum und Zeit im Lichte der speziellen Relativitätstheorie* (Berlin, 1921). Chiefly a criticism of Nordmann's book. "The book is certainly readable. The language is not only clear, but also picturesque. 'Einstein may be a treasure, but there is a fearsome troop of mathematical reptiles keeping inquisitive folk away from it. Let us drive them off with the whip of simple terminology, and approach the splendour of Einstein's theory.' This is the author's intention, like that of many others; how does he succeed? . . . Now comes the task of describing in 'simple terminology' the work of reconstruction. The reader must judge whether the following is simpler than a brief algebraic equation: 'The distance in time and the distance in space are numerically to each other as the hypotenuse and another side of a rectangular triangle are to the third side, which remains invariable. Taking this third side for base, the other two will describe above it, a triangle more or less elevated according as the velocity of the observer is more or less reduced. This fixed base is a quantity independent of the velocity. It is this which Einstein has called the "*Interval*" of events.' . . . M. Nordmann is well equipped in many ways for it. But he has fallen into the very common error of supposing that the essential truth can be given while omitting the demand for concentrated thinking on vital details. The world suffers far too much from loose thinking already. Vague generalisations, misleading analogies, superficial manifestations are made to do duty for precise statements, logical reasoning, and fundamental principles. It is not necessarily true that mathematical skill is the only way of approach to an understanding of Einstein's fundamental ideas. But it is certain that if such an understanding is to be reached it can only be by going down to a patient analysis of our own preconceived notions until we find them insufficient."]; Review of L. E. Dickson, *First Course in the Theory of Equations*, 773–774 ["Prof. Dickson's book possesses all the merits of an excellent text-book, and it is to be hoped that its circulation will be a wide one."]; "Immediate solution of dynamical problems" by G. Greenhill, 778 ["A discussion is submitted here in the manner called elementary, where the theorems of the gravitation of a sphere are proved for any portion of a spherical surface, such as a bowl, before proceeding to the result for a complete sphere."]—June 24: "A century of astronomy" by A. S. Eddington, 815–817 [From the presidential address delivered before the Royal Astronomical Society on May 30.]—Volume 110, July 1: "Advanced mathematical study and research at Cambridge" by H. S. Carslaw, 8—July 8: "Metric and British measures" by R. J. T., 29–30 ["In view of the vigorous and sustained efforts of the exponents of the metric system, and the eminent names that are to be found among them, it is perhaps not a little surprising that it makes so little progress towards general acceptance in Great Britain. . . . A fundamental distinction must, at the very outset, be drawn between the importance of stability in the units of quantity and of dimension respectively. The units of mass and capacity, speaking generally, serve simply for determining a certain quantity of goods, and the margin of tolerance is usually fairly large; . . . The unit of length is of a different character. Size, which determines the interchangeability of parts and fittings, is not capable of ready adjustment, and an error in dimensions often involves the waste of the whole article. . . . The view is quite widely held that the Imperial units are, as magnitudes, more suitable for commercial purposes than the metric. There is, therefore, at least a possibility that the solution of the metric controversy may be found in the development of a system based upon the British units, but so modified as to be capable of treatment on pure decimal lines. The Report of the Committee of the Conjoint Board suggests that the possibilities of such a solution should be explored, and one experiment in this direction has already been tried with success. The troy pound was abolished in 1878, but the troy ounce was too firmly established to be dismissed entirely. Trade in the precious metals, however, is now carried on in terms of troy ounces only, and bullion weights are made up solely in decimal multiples and sub-multiples of that unit. There has certainly been some activity in this direction in recent years, and should a really logical system upon a decimal basis be devised and secure general acceptance in the countries now using Imperial units, it may be found that these units are, after all, destined to survive."]; "Absolute measurements of sound" by A. G. Webster, 42–45; "Prof. J. C. Kapteyn, For. Mem., R. S." by A. C. D. Crommelin, 48–49.

REVUE GÉNÉRALE DES SCIENCES, volume 33, May 30, 1922: "A propos de la conception einsteinienne de l'espace fini" by R. Paucot, 289–290—June 15: "Une famille d'astronomes: les Herschel. A propos du centenaire de la mort de William Herschel" by E. Doublet, 326–330.

REVUE DE MATHÉMATIQUES SPÉCIALES, volume 32, July, 1922: "Démonstration géométrique des formules de Serret-Frenet" by L. Pomey, 217–219.

Science, volume 55, June 23, 1922: "Are scientists encouraging popular ignorance?" by E. C. Bingham, 664–667 [Considers the objections to the metric system in the report of the National Industrial Conference Board.]—Volume 56, July 14: "Methods of German publishers" by R. C. Archibald, 45 ["In Germany the chief publishers of mathematical books and periodicals are Springer, Teubner, and Vereinigung wissenschaftlicher Verleger (a combination of the firms: Göschen, Guttentag, Reimer, Trübner and Veit). They have decided that for their mathematical publications of 1922 Americans shall, in general, be required to pay at least as much as \$2.40 per 100 marks of the price for Germany. Of *Jahrbuch über die Fortschritte der Mathematik*, volume 45 . . . part 1 . . . and part 2 . . . are sold in Germany for 73 and 190 marks respectively. The corresponding prices for America are \$4.65 and \$9.00! Such extortion ought appreciably to hasten the appearance of an American abstract journal, the establishment of which has been already approved by the National Research Council. But again, *Journal für die reine und angewandte Mathematik* (Crelle), volume 151 (1920–21), is sold in Germany for 96 marks; the price to America is \$6.00! . . . The above facts, obtained from the publishers themselves on May 26 and May 31, 1922, will probably suggest to mathematicians the immediate cancellation of all contemplated orders for the publications of Vereinigung wissenschaftlicher Verleger—at least."]

PROBLEMS AND SOLUTIONS.

EDITED BY B. F. FINKEL, OTTO DUNKEL, AND H. P. MANNING.

Send all communications about Problems and Solutions to B. F. FINKEL, Springfield, Mo.

PROBLEMS FOR SOLUTION.

[N. B. Problems containing results believed to be new, or extensions of old results, are especially sought. The editorial work would be greatly facilitated if, on sending in problems, proposers would also enclose any solutions or information that will assist the editors in checking the statements. In general, problems in well-known text-books, or results found in readily accessible sources, will not be proposed as problems for solution in the MONTHLY. In so far as possible, however, the editors will be glad to assist the members of the Association with their difficulties in the solution of such problems.]

2981. Proposed by H. P. MANNING, Providence, R. I.

Find the envelope of the circle on which two diametrically opposite points divide in a given ratio the focal radii of a variable point on an ellipse or hyperbola.

2982. Proposed by H. P. MANNING, Providence, R. I.

Solve the following problem without using analytic geometry: A triangular yard has a post at each corner. Given the lengths of the sides of the yard and of the posts, find the length and the position of the foot of a ladder that will just reach the top of each post without changing this position.

2983. Proposed by R. S. UNDERWOOD, Alabama Polytechnic Institute.

Prove that the following terminating series have the sums indicated, where by 0! is meant 1:

$$(1)\quad \frac{1}{n!\,1!}+\frac{1}{(n-2)!\,3!}+\frac{1}{(n-4)!\,5!}+\cdots=\frac{2^n}{(n+1)!},$$

$$(2)\quad \frac{1}{(n+1)!\,0!}+\frac{1}{(n-1)!\,2!}+\frac{1}{(n-3)!\,4!}+\cdots=\frac{2^n}{(n+1)!}.$$

(These coincide for n even but are distinct for n odd),

$$(3)\quad \frac{1}{n!\,1!}-\frac{1}{(n-2)!\,3!}+\frac{1}{(n-4)!\,5!}-\cdots=\frac{\alpha(-4)^{[n/4]}}{(n+1)!}$$

where $[n/4]$ denotes the greatest integer not exceeding $n/4$, and where $\alpha = 1, 2, 2, 0$ according as n is congruent to 0, 1, 2, 3 (mod 4).

Obtain a similar form for the series

$$(4)\quad \frac{1}{(n+1)!\,0!}-\frac{1}{(n-1)!\,2!}+\frac{1}{(n-3)!\,4!}-\cdots.$$